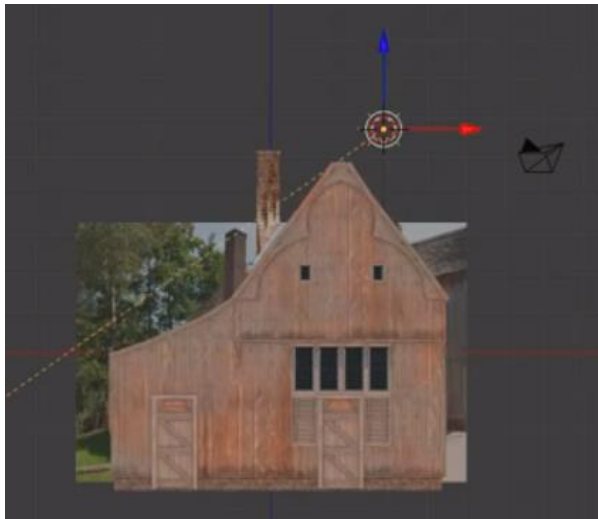


Chapter 4, lesson 60, Improving materials

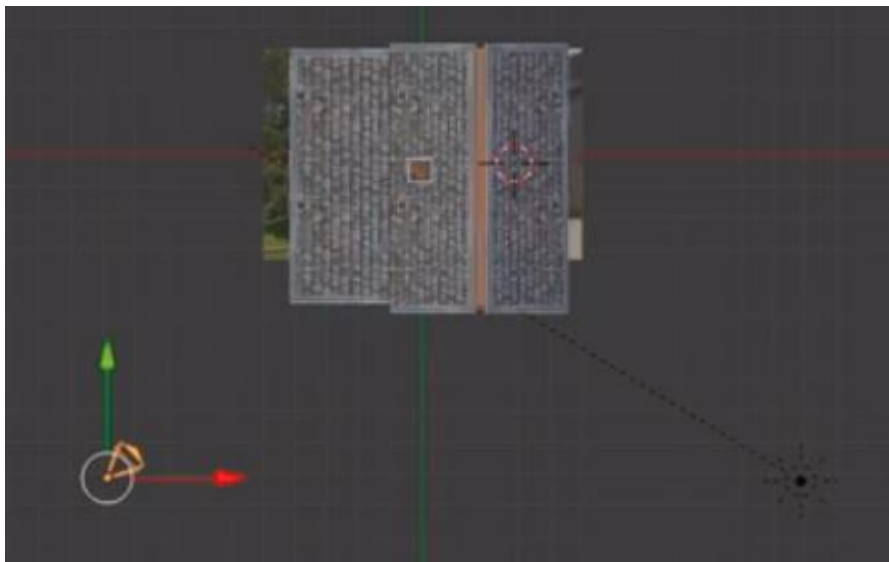
Chapter 4, lesson 60, Improving materials

In this lesson we will work in the node editor and improve our materials. So far, we have done the basics of our materials but the PBR, meaning physically based rendering is not setup yet. We will set it up by adding multiple image textures we also call them maps to dictate how different properties of the material will behave. We will use the base color maps that we have setup and to that we will add specular maps, roughness maps and normal maps.

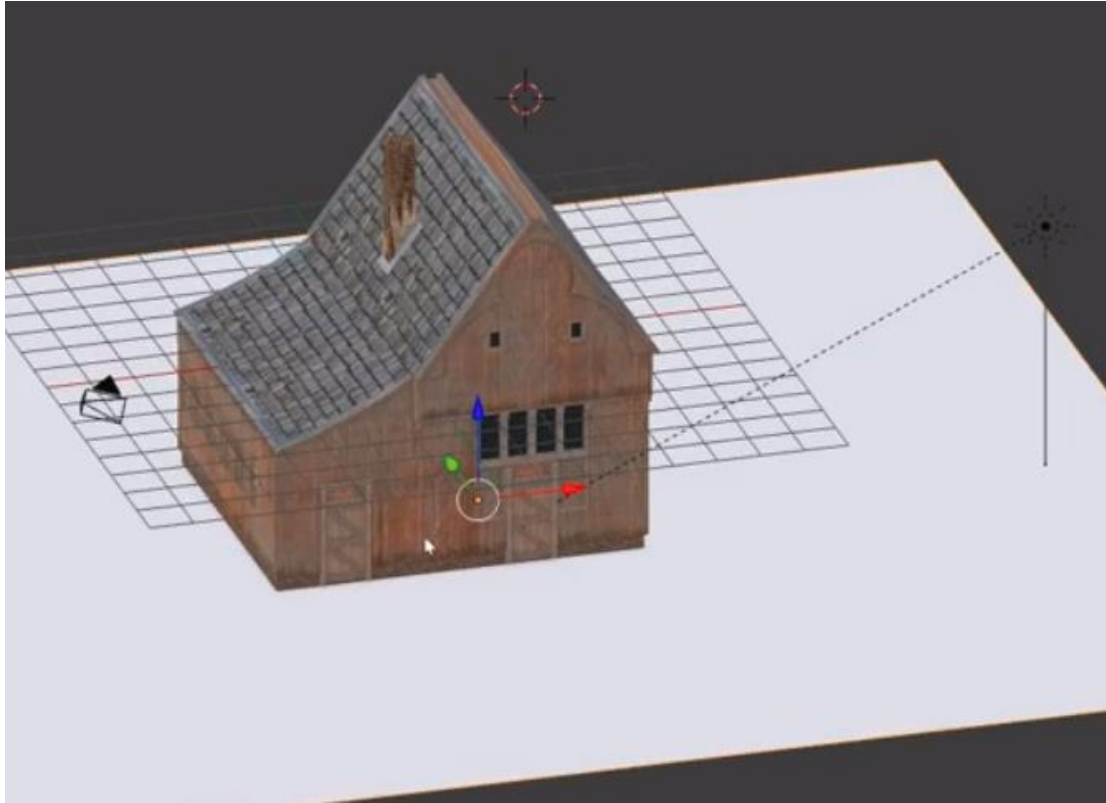
To start off we will setup the scene. Start by removing the lamp and add a sunlamp instead. The sunlamps position does not matter, with a sunlamp only it's rotation is considered. It will illuminate the scene globally. Rotate the lamp and increase its strength to 4 in the lamps properties.



Rotate it again in the Z direction about 45 degrees to come from the front side of the building. Then move and rotate the camera to the other side like this.



Now create a plane and add it as a ground for our building.

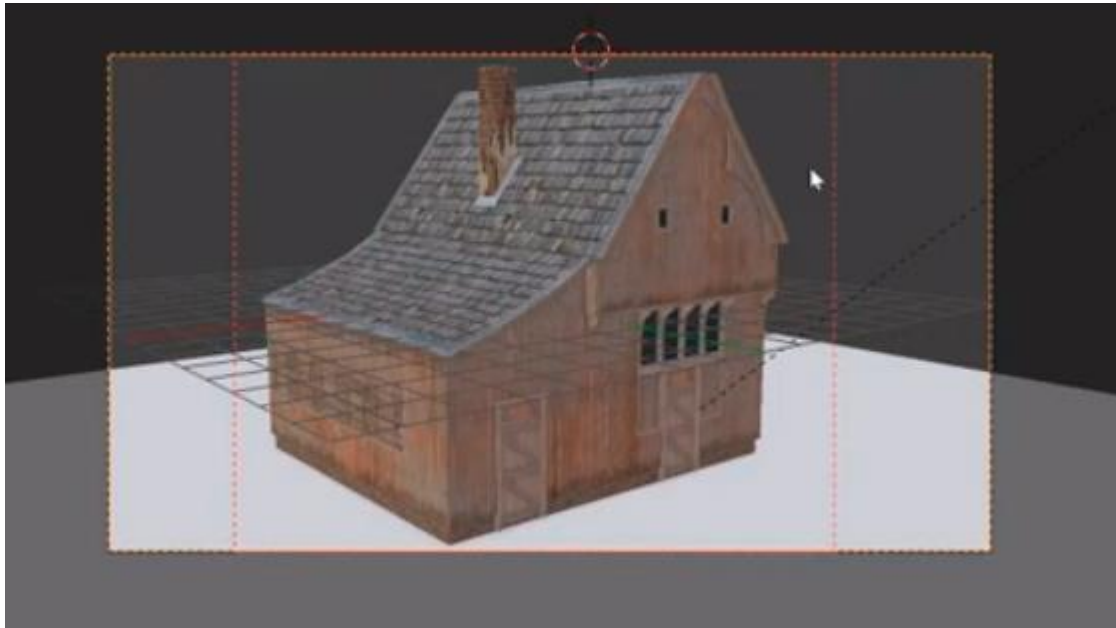


Now we will adjust the camera. Hit zero on the numpad to change to camera view. Then use **"shift+f"** to enter fly mode. Now you can adjust the position and rotation of the camera by moving around with your mouse and the **"wsad"** keys. When you are done, just click the mouse and the camera will take its new position.

While the camera is selected, and you are viewing from it you can use the normal transformation hotkeys on it as well. For instance, if you want to lower it hit **"G"** followed by **"Z"** and move the mouse to downwards.

To speed up the rendering time while we are working we will use **"ctrl+b"** to create a render border. Use the shortcut and drag a border around the house. This will omit rendering anything outside the camera and outside the border. If you drag around the camera view Blender will interpret this to mean the camera view only.

To clear the render border use **"ctrl+alt+b"**

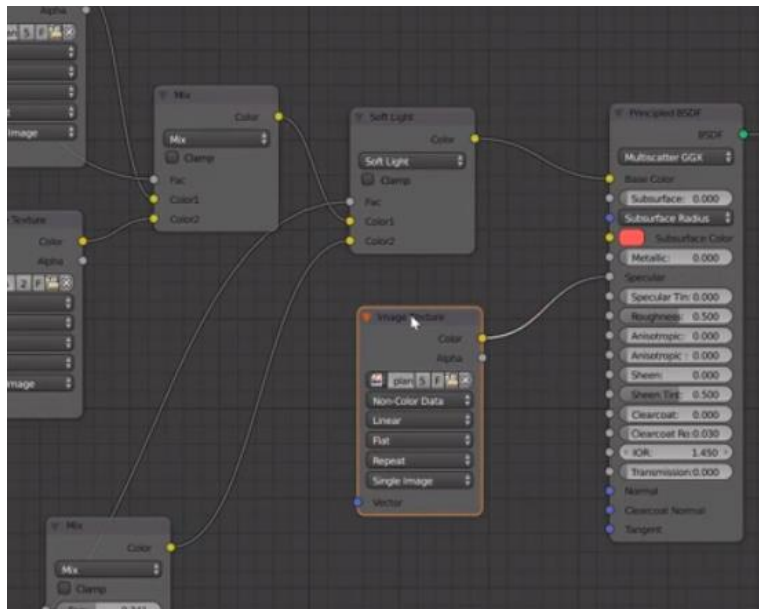


Go to the viewport shading menu and select rendered view. Blender will now make a real-time rendering of our model, taking the light into account. The longer you keep it rendering the more the image will clear up.

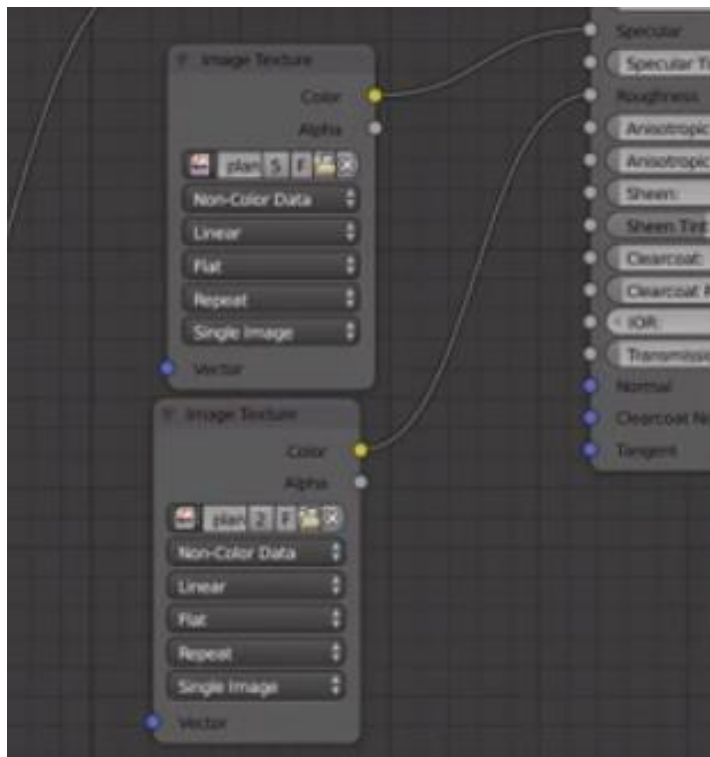


Now we will get to work on our material improvements. Go back to material viewport shading and open the node editor next to the 3D view. Select the building and in the material properties panel select the “planks_5” material.

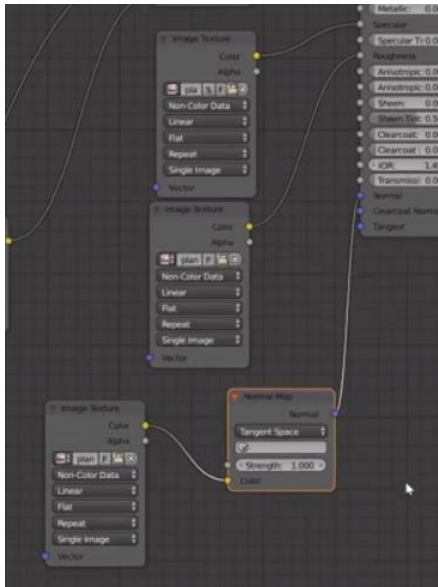
Add an image texture node into the graph and browse for the texture map called “planks_5_spec.png”. Change the type from color to non-color data and plug it into the specular input of the principled shader.



Copy the image texture node with “shift+d” and browse for the roughness map called “planks_5_rough.png”. Plug it into the roughness input of the principled shader.

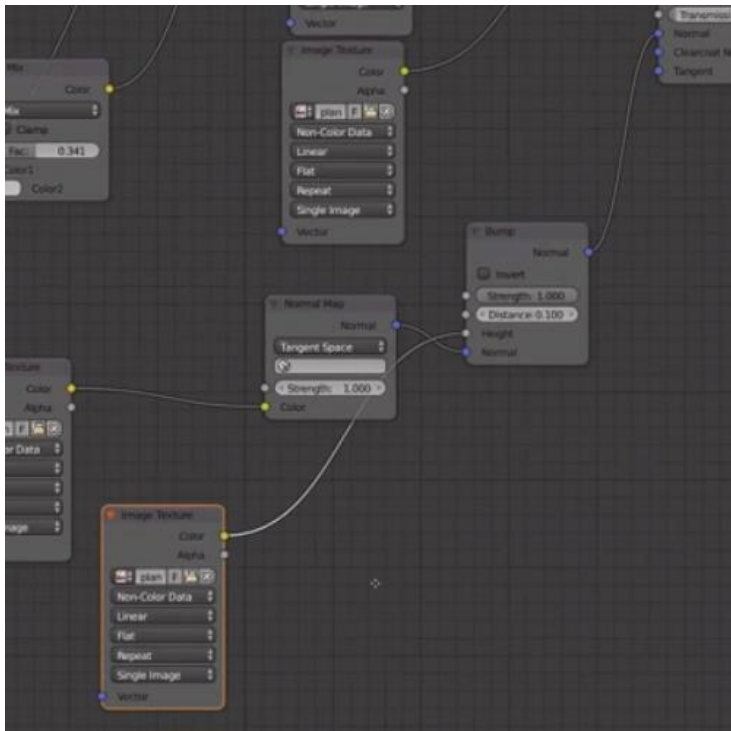


Duplicate the image texture node again and this time browse for the “planks_5_nor.png”. Add a normal map node and pipe the color output of the image texture to the input of the normal map. The normal map will then be piped to the normal input of the principled shader.



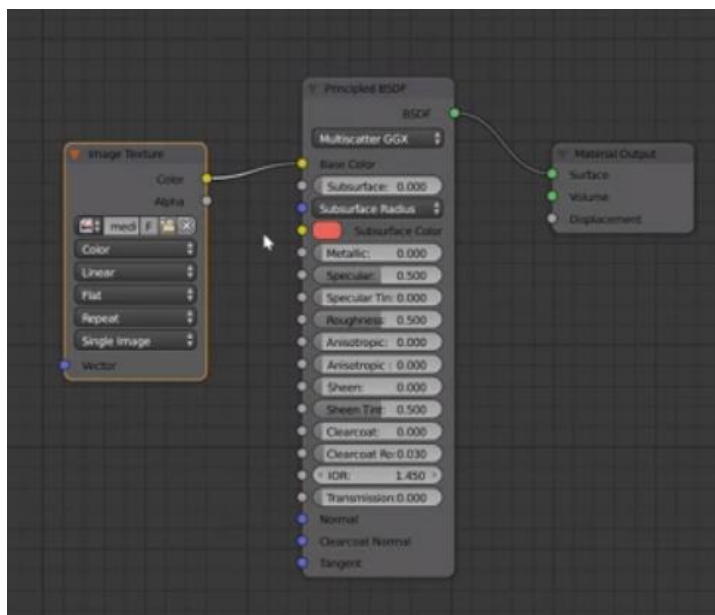
Lastly for this material we will add a bump node that will enable us to combine a height map with the normal map. Add the bump node between the normal map and the normal input of the principled shader.

Add another image texture node and browse for the “planks_5_bump.png” image. Pipe the bump map to the height input of the bump node.





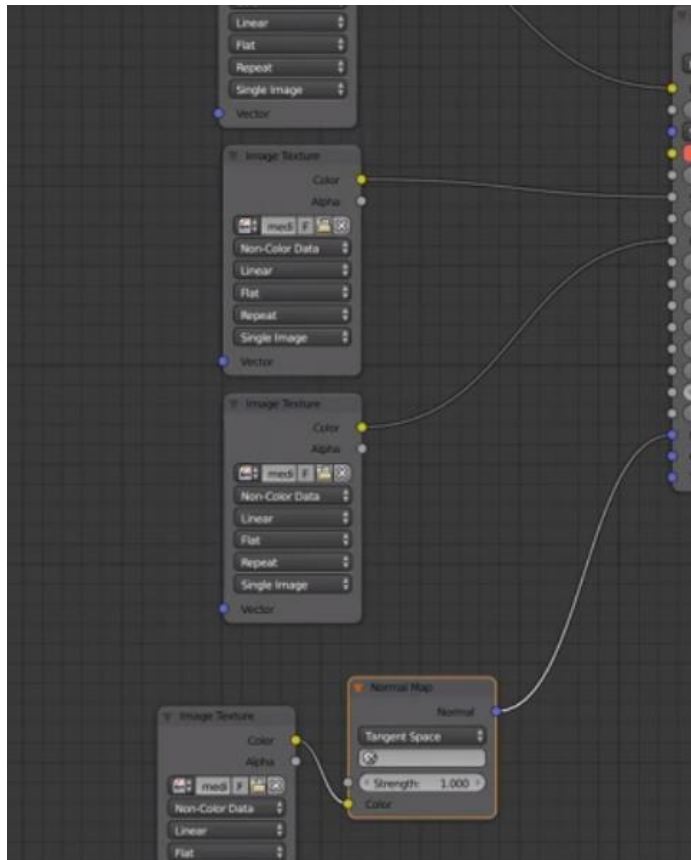
Now we will move over to the “roof_grey” material and add image maps to that material. Select it in the material properties panel. In this material we still have a diffuse shader. Delete it and replace it with a principled shader. Connect the image texture that is already in the graph to the base color for the principled shader.



Duplicate the image texture with “**shift+d**” and browse for the “**medieval_roof_2_spec.png**” that comes bundled with the course. Connect it to the Specular input of the principled shader and change it from “color” to “non-color data”.

Duplicate the Image texture again and this time browse for the “**medieval_roof_2_rough.png**”. Connect it to the roughness input of the principled shader.

Duplicate the image texture once again and. Also go to the add menu and find the Normal map node in the Vector category. Connect the image texture node color output to the color input of the normal map node. Then connect the normal map node to the normal input of the principled shader. Browse for the image texture and find “**medieval_roof_2_NOR.png**”.



In the 3D viewport change the viewport shading to rendered view and see how this material now looks.

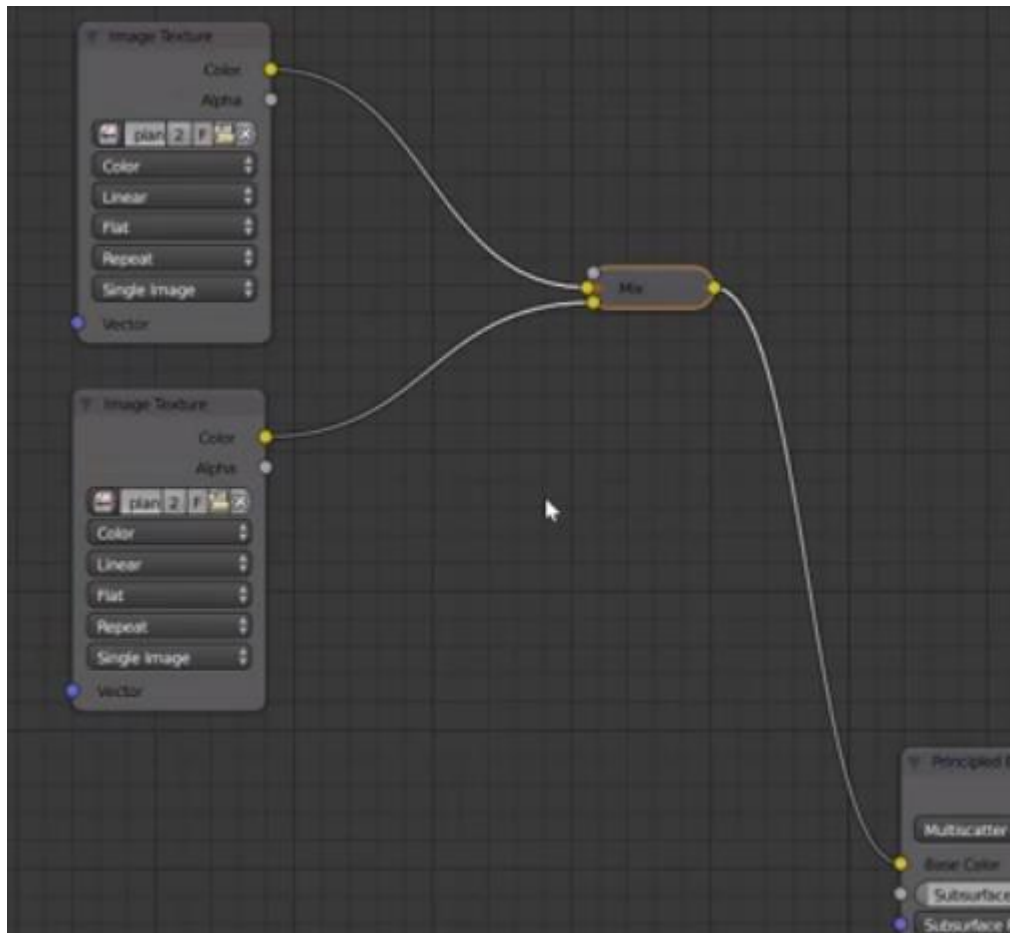
We will end by walking through the material for the wooden bars. Then you can continue to improve the other materials that we have made before starting the next lesson.

Select an object that uses the “**planks_4**” material. For instance, one of the doorframes. In the node editor you will see that we have the same situation here as we had for the roof. We will start by deleting the diffuse shader and replacing it with the principled shader.

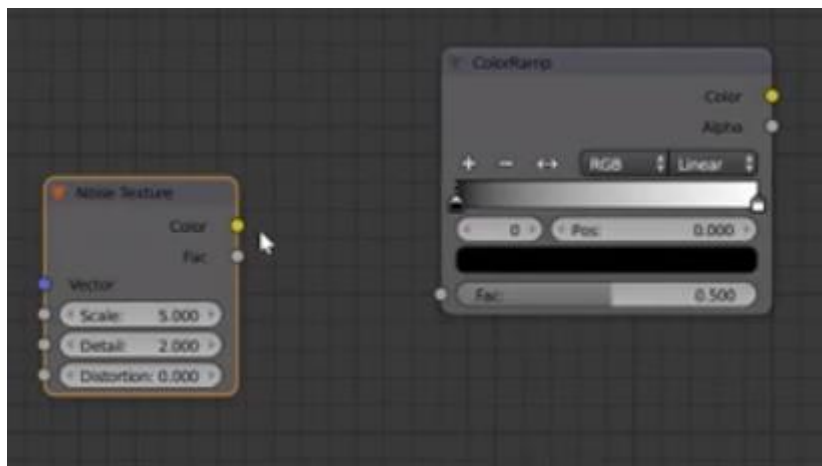
Now we will do some work on the base color of this material so that we get some more color variation.

Zoom in on the object that you selected and use the border render with “**ctrl+b**” and drag a square around it. Enter rendered shading mode.

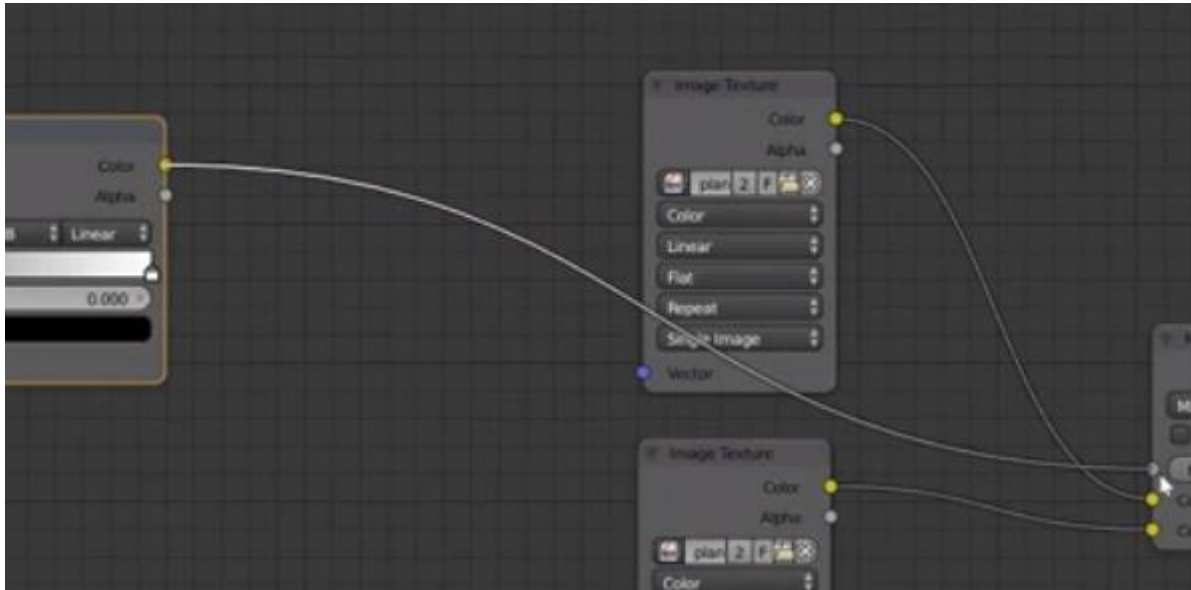
Now we will create the color mix. Duplicate the image texture with the diffuse color map and combine the two diffuse color maps. Do this by holding alt and dragging between the image texture nodes to add a mixrgb node.



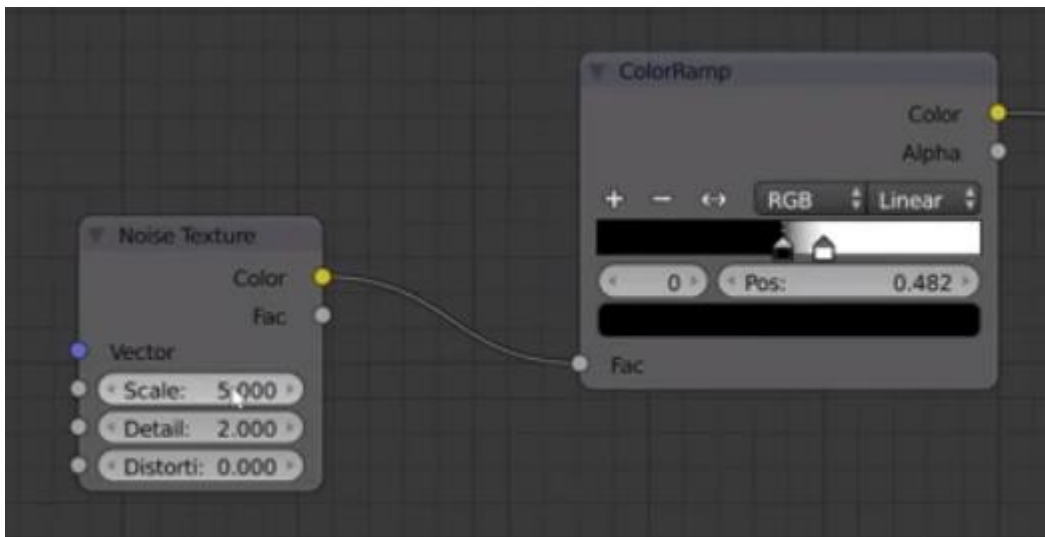
Add a color ramp to the left of the two image textures and a noise texture node to the left of that.



Connect the noise texture color output to the colorramps input. Then connect the colorramps output to the mixrgb nodes fac input.



Lastly add a brightness/contrast node between the second image texture node and the mixrgb node. Set the brightness value of this node to -0.07. Then move the sliders of the color ramp close to each other in the center



Set the detail value of the noise texture to 7. From here you can keep tweaking the noise texture values, the colorramp and the brightness/contrast node.

This is the end of this lesson. In the next lesson we will render our building.